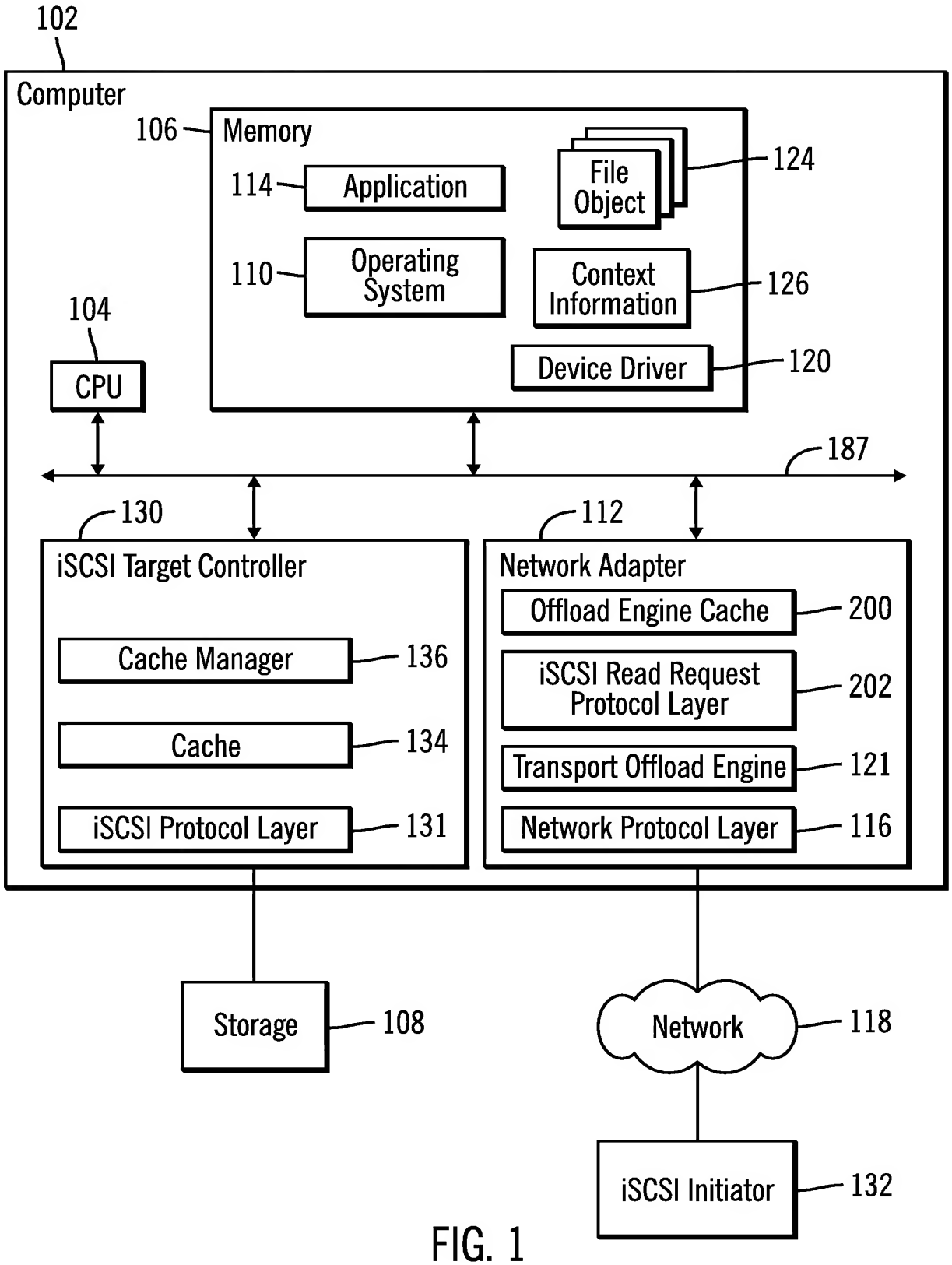

102
Computer
106
Memory
114
Application
110
Operating System
124
File Object
126
Context Information
120
Device Driver
104
CPU
187
130
iSCSI Target Controller
Cache Manager
136
Cache
134
iSCSI Protocol Layer
131
112
Network Adapter
Offload Engine Cache
200
iSCSI Read Request Protocol Layer
202
Transport Offload Engine
121
Network Protocol Layer
116
Storage
108
Network
118
iSCSI Initiator
132

FIG. 1

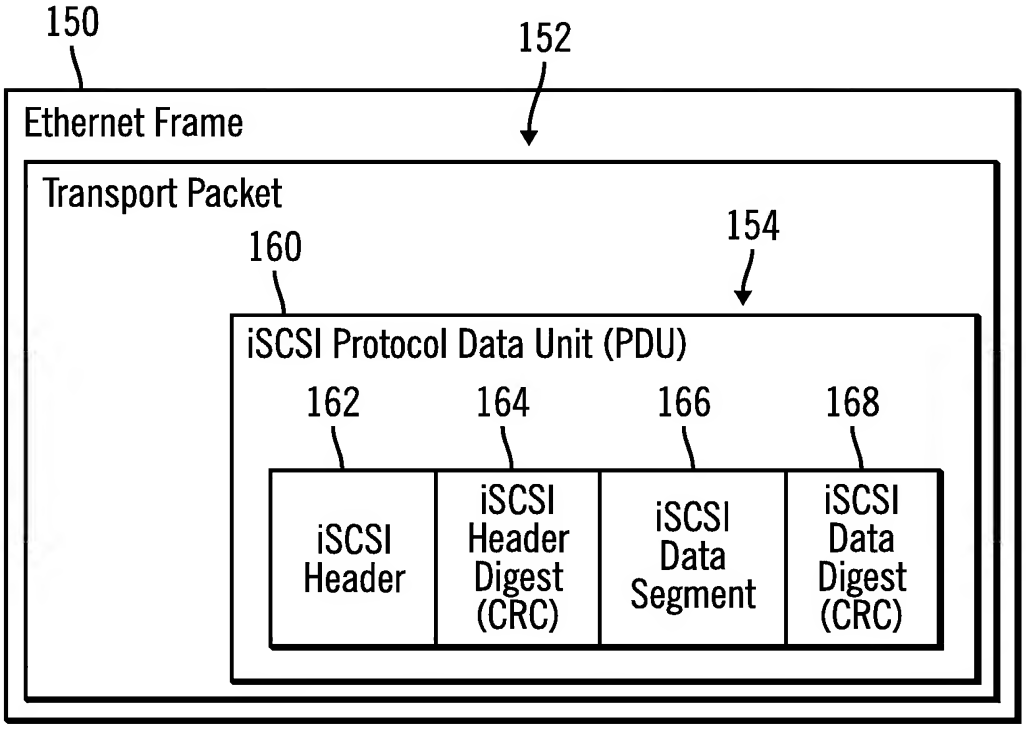
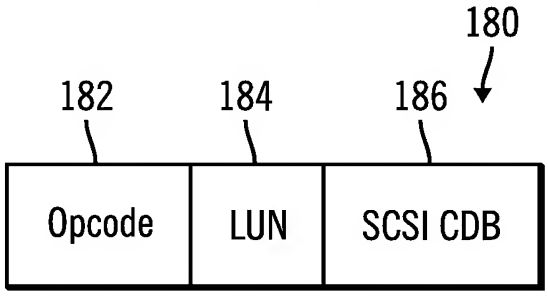
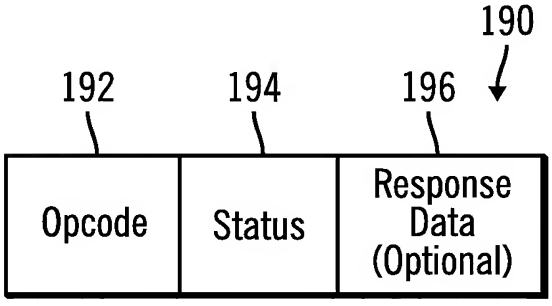


FIG. 2



iSCSI Header for SCSI Initiator Command

FIG. 3A



iSCSI Header and Data Sections of an iSCSI Target Response PDU

FIG. 3B

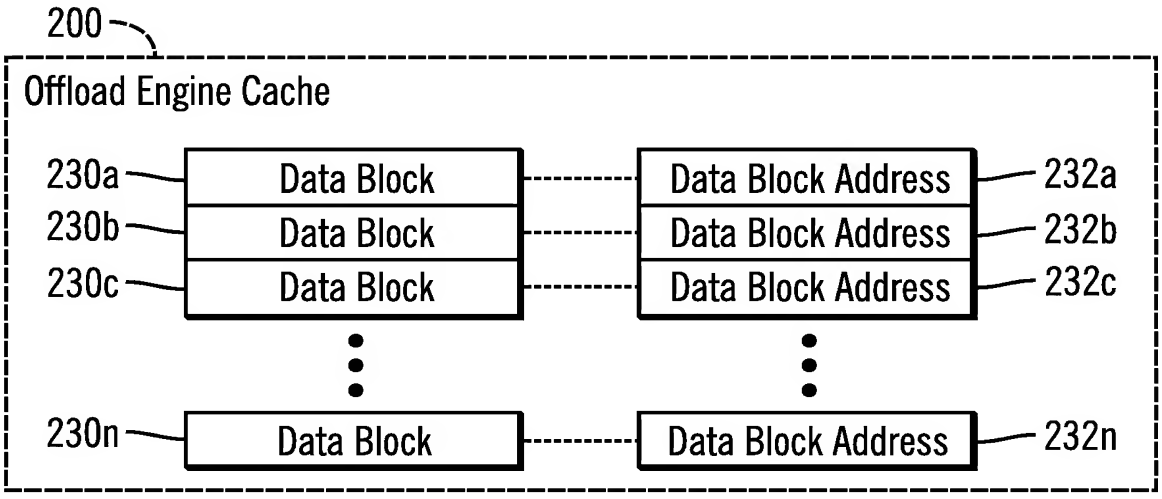

200
Offload Engine Cache
230a
Data Block
Data Block Address
232a
230b
Data Block
Data Block Address
232b
230c
Data Block
Data Block Address
232c
230n
Data Block
Data Block Address
232n

FIG. 4

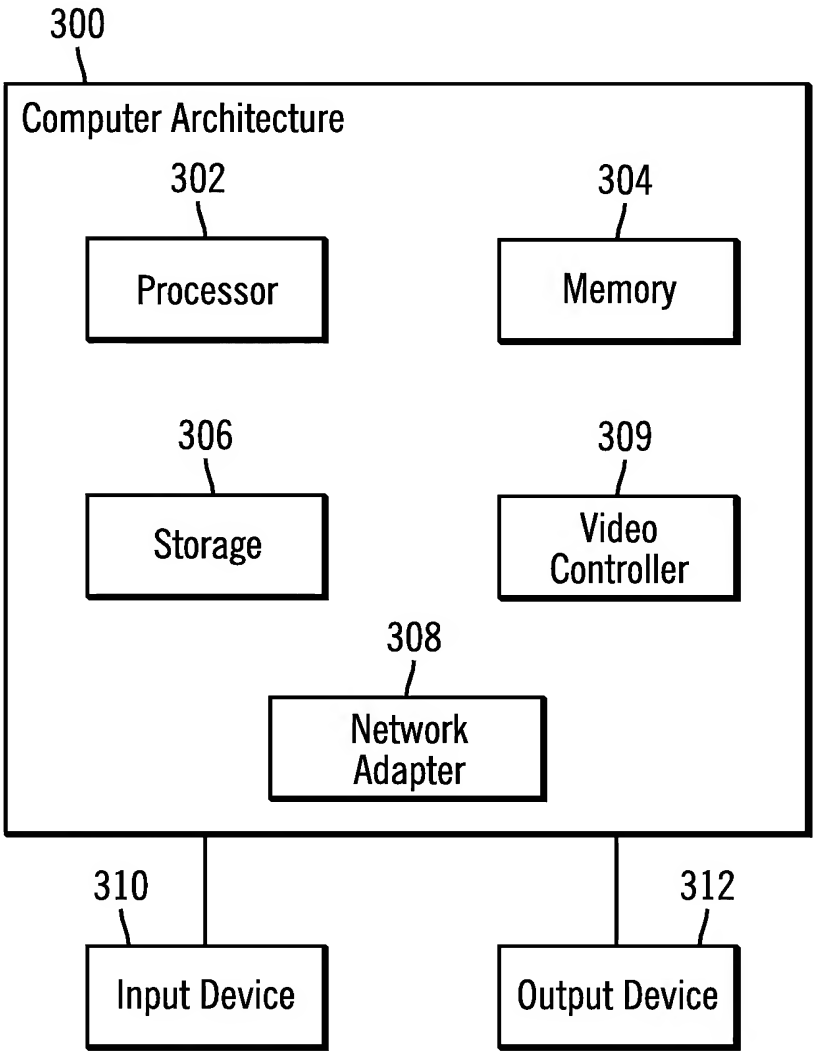

300
Computer Architecture
302
Processor
304
Memory
306
Storage
309
Video Controller
308
Network Adapter
310
Input Device
312
Output Device

FIG. 7

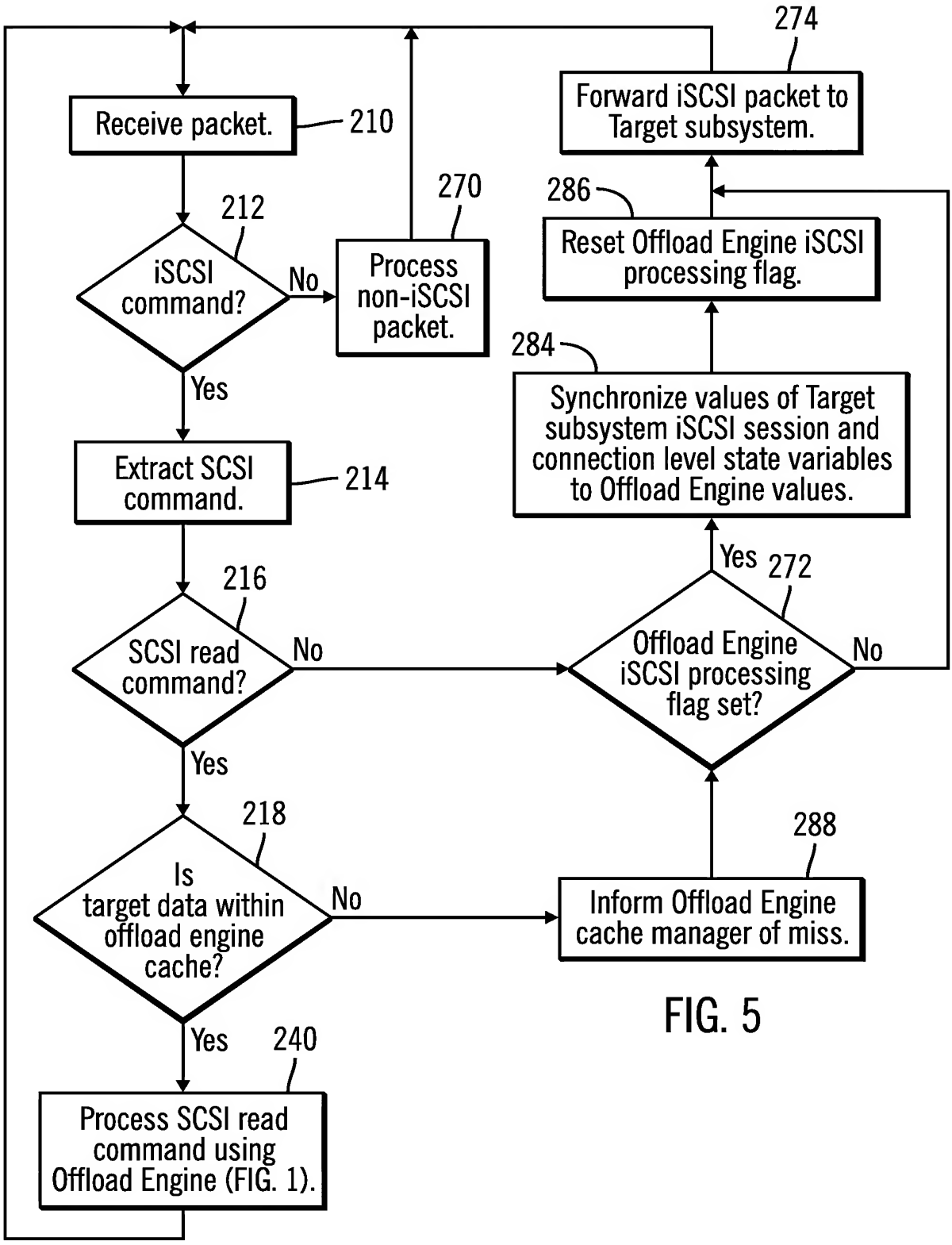

Receive packet.
210
212
iSCSI command?
No
Process non-iSCSI packet.
270
Yes
Extract SCSI command.
214
216
SCSI read command?
No
Yes
218
Is target data within offload engine cache?
No
Yes
240
Process SCSI read command using Offload Engine (FIG. 1).
274
Forward iSCSI packet to Target subsystem.
286
Reset Offload Engine iSCSI processing flag.
284
Synchronize values of Target subsystem iSCSI session and connection level state variables to Offload Engine values.
Yes
272
Offload Engine iSCSI processing flag set?
No
288
Inform Offload Engine cache manager of miss.

FIG. 5

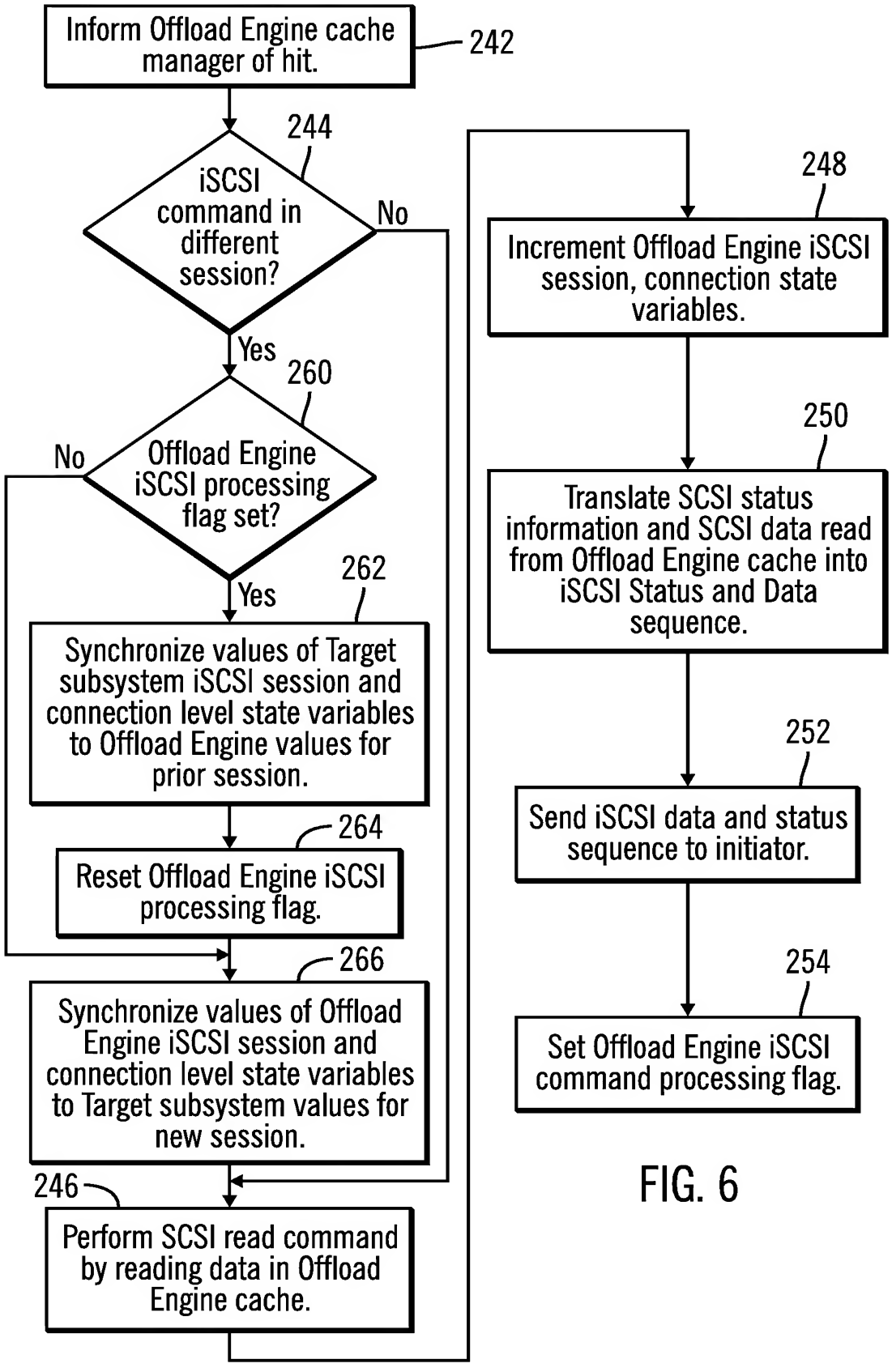

Inform Offload Engine cache manager of hit.
242
244
iSCSI command in different session?
No
Yes
260
Offload Engine iSCSI processing flag set?
No
Yes
262
Synchronize values of Target subsystem iSCSI session and connection level state variables to Offload Engine values for prior session.
264
Reset Offload Engine iSCSI processing flag.
266
Synchronize values of Offload Engine iSCSI session and connection level state variables to Target subsystem values for new session.
246
Perform SCSI read command by reading data in Offload Engine cache.
248
Increment Offload Engine iSCSI session, connection state variables.
250
Translate SCSI status information and SCSI data read from Offload Engine cache into iSCSI Status and Data sequence.
252
Send iSCSI data and status sequence to initiator.
254
Set Offload Engine iSCSI command processing flag.

FIG. 6